

LISTING OF CLAIMS

1 1. (Currently Amended) A method comprising:
 2 in response to obtaining first data for replication to a secondary storage area,
 3 causing an indicator to be set for a first location, wherein
 4 the first data are stored in the first location of a first storage area, and
 5 the indicator indicates that the first data are unsynchronized with corresponding
 6 data in a corresponding location of the secondary storage area; and
 7 causing an entry to be added to a list of entries for the first location, wherein
 8 each entry in the list is related to an update to data in the first location, and
 9 the list can be used to reset the indicator for the first location.

1 2. (Currently Amended) The method of claim 1 further comprising:
 2 ~~causing adding an update identifier to the entry~~~~be added to a set of updates to the first location.~~

1 3. (Currently Amended) The method of claim ~~2-1~~ further comprising:
 2 ~~in response to a transaction writing the first data to the first location of the first storage area,~~
 3 ~~writing the first location a record to a transaction log for the transaction, wherein~~
 4 the record comprises the first location.

1 4. (Currently Amended) The method of claim ~~2-1~~ further comprising:
 2 in response to receiving an acknowledgement that the first data have been ~~written to the~~ received
 3 at the secondary storage area,
 4 ~~causing the first location to be removed from each active transaction of at least one active~~
 5 ~~transaction in the log, and~~
 6 causing the entry ~~update identifier~~ to be removed from the ~~set of updates to~~ list of entries
 7 for the first location.

1 5. (Currently Amended) The method of claim ~~4-3~~ further comprising:
 2 in response to receiving an acknowledgement that the first data have been received at the
 3 secondary storage area,
 4 causing the first location to be removed from each active transaction of at least one active
 5 transaction in the transaction log; and

if one active transaction of the at least one active transaction in the transaction log is completed,
writing a second record to the transaction log indicating that the one active transaction is
complete.

6. (Currently Amended) The method of claim 5, further comprising:
in response to the writing the second record to the transaction log, freeing space in the
transaction log previously used by the one active transaction.

7. (Currently Amended) The method of claim 4 further comprising:
in response to removing the entry update identifier from the set of updates to list of entries for the
first location,
determining whether the set of updates to list of entries for the first location is empty; and
if the set of updates to list of entries for the first location is empty,
resetting the indicator for the first location.

8. (Currently Amended) The method of claim 4 further comprising:
in response to removing the entry update identifier from the set of updates to list of entries for the
first location, determining whether the set of updates to list of entries for the first location
is empty, and
if the set of updates to list of entries for the first location is empty,
causing the indicator for the first location to be reset.

9. (Currently Amended) The method of claim 4 wherein
the causing the entry update identifier to be removed from the set of updates to list of entries for
the first location comprises
removing the entry update identifier from the set of updates to list of entries for the first
location.

10. (Currently Amended) The method of claim 2-1 wherein
the causing the indicator to be set comprises setting the indicator.

11. (Currently Amended) The method of claim 2-1 wherein
the causing the ~~entry update identifier~~ to be added to the set of updates to list of entries for the
first location comprises adding the ~~entry update identifier~~ to the set of updates to list of
entries for the first location.

12. (Currently Amended) The method of claim 2-1 wherein
if an acknowledgement that the first data have been ~~written to the~~ received at the secondary
storage area is not received,
causing the indicator to be written to a persistent storage area.

13. (Original) The method of claim 12 further comprising:
using the indicator to synchronize the first data in the first location of the first storage area with
the corresponding data in the corresponding location of the secondary storage area.

14. (Currently Amended) A system comprising:
causing means for causing an indicator to be set for a first location in response to obtaining first
data for replication to a secondary storage area, wherein
the first data are stored in the first location of a first storage area, and
the indicator indicates that the first data are unsynchronized with corresponding data in a
corresponding location of the secondary storage area; and
second causing means for causing an ~~update identifier~~ entry to be added to a set of updates to list
of entries for the first location, wherein
each entry in the list is related to an update to data in the first location, and
the list can be used to reset the indicator for the first location.

15. (Currently Amended) The system of claim 14 further comprising:
writing means for writing the ~~a record first location~~ to a transaction log ~~for a transaction in~~
~~response to the transaction writing the first data to the first location of the first storage~~
~~area, wherein~~
the record comprises the first location.

1 16. (Currently Amended) The system of claim 15 further comprising:
 2 ~~third causing means for causing the first location to be removed from each active transaction of~~
 3 ~~at least one active transaction in the log in response to receiving an acknowledgement~~
 4 ~~that the first data have been written to the secondary storage area, and~~
 5 ~~fourth~~ third causing means for causing the update identifier entry to be removed from the set of
 6 updates to list of entries for the first location in response to receiving the an
 7 acknowledgement that the first data have been received at the secondary storage area.

1 17. (Currently Amended) The system of claim 1 further comprising:
 2 third causing means for causing the first location to be removed from each active transaction of
 3 at least one active transaction in the transaction log in response to receiving an
 4 acknowledgement that the first data have been received at the secondary storage area; and
 5 second writing means for writing a second record to the transaction log indicating that one active
 6 transaction is complete if the one active transaction of the at least one active transaction
 7 in the log is completed.

1 18. (Currently Amended) The system of claim 1 further comprising:
 2 determining means for determining whether the ~~set of updates to~~ list of entries for the first
 3 location is empty in response to removing the update identifier entry from the set of
 4 ~~updates to~~ list of entries for the first location; and
 5 resetting means for resetting the indicator for the first location if the ~~set of updates to~~ list of
 6 entries for the first location is empty.

1 19. (Currently Amended) A computer-readable medium comprising:
 2 causing instructions to cause an indicator to be set for a first location in response to obtaining
 3 first data for replication to a secondary storage area, wherein
 4 the first data are stored in the first location of a first storage area, and
 5 the indicator indicates that the first data are unsynchronized with corresponding data in a
 6 corresponding location of the secondary storage area, and
 7 second causing instructions to cause an entry to be added to a list of entries for the first location,
 8 wherein
 9 each entry in the list is related to an update to data in the first location, and

10 the list can be used to reset the indicator for the first location.

1 20. (Currently Amended) The computer-readable medium of claim 19 further
2 comprising:
3 ~~second~~third causing instructions to cause an update identifier to be added to the entry a set of
4 ~~updates to the first location.~~

1 21. (Currently Amended) The computer-readable medium of claim 20 further
2 comprising:
3 writing instructions to write the ~~first location~~ a record to a transaction log for a transaction in
4 ~~response to the transaction writing the first data to the first location of the first storage~~
5 ~~area, wherein~~
6 the record comprises the first location.

1 22. (Currently Amended) The computer-readable medium of claim 21 further
2 comprising:
3 ~~third causing instructions to cause the first location to be removed from each active transaction~~
4 ~~of at least one active transaction in the log in response to receiving an acknowledgement~~
5 ~~that the first data have been written to the secondary storage area, and~~
6 ~~fourth~~third causing instructions to cause the ~~update identifier~~entry to be removed from the set of
7 ~~updates to~~list of entries for the first location in response to receiving the an
8 ~~acknowledgement that the first data have been received at the secondary storage area.~~

1 23. (Currently Amended) The computer-readable medium of claim 22 further
2 comprising:
3 third causing instructions to cause the first location to be removed from each active transaction
4 of at least one active transaction in the transaction log in response to receiving an
5 acknowledgement that the first data have been received at the secondary storage area, and
6 ~~second~~ writing instructions to write a second record to the transaction log, wherein the second
7 record indicates that ~~indicating that one active transaction is complete if the one active~~
8 ~~transaction of the at least one active transaction in the transaction log is completed.~~

24. (Currently Amended) The computer-readable medium of claim 22 further comprising:
determining instructions to determine whether the ~~set of updates to~~ list of entries for the first
location is empty in response to removing the ~~update identifier entry~~ from the set of
~~updates to~~ list of entries for the first location; and
resetting instructions to reset the indicator for the first location if the ~~set of updates to~~ list of
entries for the first location is empty.

25. (Original) A computer system comprising:
a processor, and
the computer-readable medium of claim 19, wherein
the computer-readable medium is coupled to the processor.

26. (Currently Amended) A system comprising:
a causing module to cause an indicator to be set for a first location in response to obtaining first
data for replication to a secondary storage area, wherein
the first data are stored in the first location of a first storage area, and
the indicator indicates that the first data are unsynchronized with corresponding data in a
corresponding location of the secondary storage area, and
a second causing module to cause an entry to be added to a list of entries for the first location,
wherein
each entry in the list is related to an update to data in the first location, and
the list can be used to reset the indicator for the first location.

27. (Currently Amended) The system of claim 26 further comprising:
a ~~second~~ third causing module to cause an update identifier to be added to the entry ~~a set of~~
~~updates to the first location.~~

28. (Currently Amended) The system of claim ~~27~~ 26 further comprising:
a writing module to write ~~the first location~~ a record to a transaction log, wherein
the record comprises the first location. ~~for a transaction in response to the transaction~~
~~writing the first data to the first location of the first storage area.~~

29. (Currently Amended) The system of claim 28 further comprising:
~~a third causing module to cause the first location to be removed from each active transaction of~~
~~at least one active transaction in the log in response to receiving an acknowledgement~~
~~that the first data have been written to the secondary storage area, and~~
~~a fourth~~ third causing module to cause the ~~update identifier~~ entry to be removed from the ~~set of~~
~~updates to~~ list of entries for the first location in response to receiving the ~~an~~
~~acknowledgement~~ that the first data have been received at the secondary storage area.

30. (Currently Amended) The system of claim 1 further comprising:
a third causing module to cause the first location to be removed from each active transaction of
at least one active transaction in the transaction log in response to receiving an
acknowledgement that the first data have been received at the secondary storage area, and
~~31. a second writing module to write a record to the~~ transaction log indicating that one active
transaction is complete if the one active transaction of the at least one active transaction
in the transaction log is completed.

31. (Currently Amended) The system of claim 1 further comprising:
a determining module to determine whether the ~~set of updates to~~ list of entries for the first
location is empty in response to removing the update identifier from the ~~set of updates~~
~~to~~ list of entries for the first location; and
a resetting module to reset the indicator for the first location if the ~~set of updates to~~ list of entries
for the first location is empty.

32. (New) The method of claim 1, wherein
a file system sets the indicator for the first location; and
the file system adds the entry to the list of entries for the first location.

33. (New) The method of claim 4, wherein
a replicator receives the acknowledgement; and
the replicator causes a file system to remove the entry from the list of entries for the first
location.

1 34. (New) The method of claim 5, wherein
2 a replicator receives the acknowledgement;
3 the replicator causes a file system to remove the first location; and
4 the file system writes the second record indicating that the one active transaction is completed.

1 35. (New) The method of claim 7, wherein
2 the file system resets the indicator.

1 36. (New) The system of claim 14, wherein
2 a file system sets the indicator for the first location; and
3 the file system adds the entry to the list of entries for the first location.

1 37. (New) The system of claim 16, wherein
2 a replicator receives the acknowledgement; and
3 the replicator causes a file system to remove the entry from the list of entries for the first
4 location.

1 38. (New) The system of claim 17, wherein
2 a replicator receives the acknowledgement;
3 the replicator causes a file system to remove the first location; and
4 the file system writes the second record indicating that the one active transaction is completed.

1 39. (New) The system of claim 18, wherein
2 the file system resets the indicator.

1 40. (New) The computer-readable medium of claim 19, wherein
2 a file system sets the indicator for the first location; and
3 the file system adds the entry to the list of entries for the first location.

1 41. (New) The computer-readable medium of claim 22, wherein
2 a replicator receives the acknowledgement; and
3 the replicator causes a file system to remove the entry from the list of entries for the first
4 location.

1 42. (New) The computer-readable medium of claim 23, wherein
2 a replicator receives the acknowledgement;
3 the replicator causes a file system to remove the first location; and
4 the file system writes the second record indicating that the one active transaction is completed.

1 43. (New) The computer-readable medium of claim 24, wherein
2 the file system resets the indicator.

1 44. (New) The system of claim 26, wherein
2 a file system sets the indicator for the first location; and
3 the file system adds the entry to the list of entries for the first location.

1 45. (New) The system of claim 29, wherein
2 a replicator receives the acknowledgement; and
3 the replicator causes a file system to remove the entry from the list of entries for the first
4 location.

1 46. (New) The system of claim 30, wherein
2 a replicator receives the acknowledgement;
3 the replicator causes a file system to remove the first location; and
4 the file system writes the second record indicating that the one active transaction is completed.

1 47. (New) The system of claim 31, wherein
2 the file system resets the indicator.